

Munich Cancer Registry



- ▶ Survival
- ▶ Selection Matrix
- ▶ Homepage
- ▶ *Deutsch*

ICD-10 D00-D09: In situ neoplasms

Incidence and Mortality

Year of diagnosis	1998-2019
Patients	40,376
Diseases	42,475
Creation date	01/26/2021
Database export	01/07/2021
Population	4.92 m





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<https://www.tumorregister-muenchen.de/en>

<https://www.tumorregister-muenchen.de/en/facts/base/bD0009E-ICD-10-D00-D09-In-situ-neoplasms-incidence-and-mortality.pdf>

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**Global Statements about the statistics on the Internet –
Baseline Statistics** (grey button ) , **Survival** (red button )

In these analyses, the clinics and physicians of Upper Bavaria and the city and county of Landshut[#], with a total of 4.69 million inhabitants, account for the frequency of cancer diseases^{##} and the achieved long term results. Additionally, the long term survival evaluated by the Munich Cancer Registry (MCR) is compared with the results of the population-based registry in the USA (SEER), which is useful for checking the consistency of the data on an international level.

In comparing several tables, inconsistent figures may be detected. This is based on the fact that different patient cohorts are included in the base calculation, for example when proportions of multiple tumors or DCO-cases^{###} are concerned. In other cases the individual tumor diagnosis is the basis for calculation, for example with incidence.

The foot notes describe the currentness of the data. The baseline statistics and survival data are updated annually. This yearly analysis comprises the Annual Report of the MCR.

Clinics and physicians have access to essentially more detailed data, with which they can check, compare and in the best case optimize their own data and results.

We would be pleased to receive corrections, critique and useful suggestions. Just send an e-mail to tumor@ibe.med.uni-muenchen.de.

Munich Cancer Registry, January 2021

[#] Base data has been collected since 1998. An increase in new diseases is apparent, which is an effect of two extensions in the MCR catchment area (from a base population of 2.65 million to 4.10 in 2002, and to 4.69 million in 2007).

^{##} Due to the high frequency and good prognosis of non-malignant skin cancer (C44), no systematic ascertainment is performed for this diagnosis. C44 is not designated as a primary, but rather as a secondary tumor.

^{###} DCO (death certificate only) identifies a cancer case that first becomes available to the MCR through the death certificate.

ICD-10 codes (ICD-10 2016) used for specifying cancer site

Code	Description
D00.-	Carcinoma in situ of oral cavity, oesophagus and stomach
D01.-	Carcinoma in situ of other and unspecified digestive organs
D02.-	Carcinoma in situ of middle ear and respiratory system
D03.-	Melanoma in situ
D04.-	Carcinoma in situ of skin
D05.-	Carcinoma in situ of breast
D06.-	Carcinoma in situ of cervix uteri
D07.-	Carcinoma in situ of other and unspecified genital organs
D09.-	Carcinoma in situ of other and unspecified sites

INCIDENCE

Table 1

Cases by year of diagnosis, proportions of further malignancies, deaths, and active follow-up (ALL PATIENTS)

Year of diagnosis	All cases n	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	578	14.2	18.8	53.6	95.0
1999	631	15.1	18.6	50.4	95.6
2000	652	15.5	18.4	48.6	94.5
2001	668	16.6	18.2	44.3	94.0
2002	1044	17.0	18.0	47.0	95.4 #
2003	1184	16.9	17.7	41.1	93.6
2004	1583	17.0	17.4	40.7	93.7
2005	1687	17.6	16.9	37.5	93.2
2006	1724	18.2	16.4	34.8	89.3
2007	2114	18.7	15.9	34.4	86.7 #
2008	2312	19.2	15.3	29.3	97.1
2009	2478	19.7	14.7	28.4	96.4
2010	2825	20.3	14.0	24.6	96.3
2011	2843	20.6	13.2	22.2	96.4
2012	2910	21.1	12.7	22.7	96.7
2013	3290	21.6	11.8	18.4	95.0
2014	2886	22.1	10.9	19.3	91.4
2015	2365	22.6	9.8	15.4	89.0
2016	2232	22.9	8.7	12.2	98.5
2017	2095	23.2	7.3	9.1	99.3
2018	2223	23.7	5.6	6.1	99.0
2019	2151	24.0	3.7	3.2	59.0 ##
1998-2019	42475	24.0	18.8	24.5	92.9

42,475 cases diagnosed 1998-2019 are related to a total of 40,376 patients. Currently, in 14,587 (36.1 %) of these 40,376 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 9,858 / 3,023 / 1,706 (24.4 % / 7.5 % / 4.2 %) patients exist having 2 / 3 / 4+ malignancies.

The increases of incident cases in 2002 and 2007 reflect the expansion to additional registry areas.

Please be aware that data of recent annual patient cohorts may not yet be fully processed. The years under evaluation can be retrieved from the respective headings.

How to interpret:

In 2017, a subgroup of 2,095 cases has been diagnosed, of which 23.2 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 7.3 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 1a

Cases by year of diagnosis, proportions of further malignancies, deaths, and active follow-up (MALES)

Year of diagnosis	Males n	Males %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	279	48.3	12.5	25.7	68.5	95.7
1999	307	48.7	14.7	25.6	61.9	97.1
2000	305	46.8	15.7	25.4	60.7	96.1
2001	288	43.1	17.0	25.2	61.5	96.9
2002	481	46.1	18.1	25.0	60.5	97.9 #
2003	536	45.3	18.0	24.7	57.5	95.3
2004	680	43.0	19.0	24.5	56.2	95.1
2005	706	41.8	20.3	24.0	53.8	93.6
2006	696	40.4	20.8	23.5	51.9	93.4
2007	873	41.3	21.7	22.9	51.4	92.4 #
2008	869	37.6	23.0	22.3	46.1	98.3
2009	973	39.3	24.3	21.6	44.0	97.5
2010	1129	40.0	25.7	20.7	39.9	96.6
2011	1074	37.8	26.4	19.6	37.0	97.0
2012	1174	40.3	27.4	18.9	36.5	97.3
2013	1259	38.3	28.5	17.6	31.5	96.1
2014	1106	38.3	29.3	16.1	31.2	96.2
2015	925	39.1	30.1	14.5	25.2	93.0
2016	855	38.3	30.6	13.1	19.5	98.4
2017	805	38.4	31.0	11.2	15.5	99.6
2018	871	39.2	31.7	8.4	8.7	99.0
2019	817	38.0	32.3	6.0	5.6	58.6 ##
1998-2019	17008	40.0	32.3	25.7	37.7	94.5

17,008 cases diagnosed 1998-2019 are related to a total of 15,886 patients. Currently, in 7,721 (48.6 %) of these 15,886 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 4,863 / 1,714 / 1,144 (30.6 % / 10.8 % / 7.2 %) patients exist having 2 / 3 / 4+ malignancies.

The increases of incident cases in 2002 and 2007 reflect the expansion to additional registry areas.

Please be aware that data of recent annual patient cohorts may not yet be fully processed. The years under evaluation can be retrieved from the respective headings.

How to interpret:

In 2017, a subgroup of 805 cases has been diagnosed, of which 31.0 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 11.2 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 1b

Cases by year of diagnosis, proportions of further malignancies, deaths, and active follow-up (FEMALES)

Year of diagnosis	Females n	Females %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	299	51.7	15.7	14.3	39.8	94.3
1999	324	51.3	15.4	14.2	39.5	94.1
2000	347	53.2	15.3	14.0	38.0	93.1
2001	380	56.9	16.1	13.8	31.3	91.8
2002	563	53.9	16.2	13.6	35.5	93.3 #
2003	648	54.7	16.0	13.3	27.6	92.1
2004	903	57.0	15.4	13.0	29.0	92.7
2005	981	58.2	15.5	12.5	25.8	92.9
2006	1028	59.6	16.2	12.1	23.2	86.5
2007	1241	58.7	16.3	11.6	22.5	82.6 #
2008	1443	62.4	16.4	11.0	19.2	96.3
2009	1505	60.7	16.4	10.5	18.3	95.7
2010	1696	60.0	16.5	9.9	14.4	96.1
2011	1769	62.2	16.5	9.4	13.3	96.1
2012	1736	59.7	16.7	9.0	13.3	96.3
2013	2031	61.7	16.8	8.4	10.4	94.3
2014	1780	61.7	17.2	7.8	11.9	88.4
2015	1440	60.9	17.5	6.9	9.1	86.5
2016	1377	61.7	17.7	6.1	7.6	98.6
2017	1290	61.6	17.9	5.0	5.0	99.1
2018	1352	60.8	18.3	4.0	4.4	99.0
2019	1334	62.0	18.5	2.4	1.6	59.2 ##
1998-2019	25467	60.0	18.5	14.3	15.6	91.8

25,467 cases diagnosed 1998-2019 are related to a total of 24,490 patients. Currently, in 6,866 (28.0 %) of these 24,490 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 4,995 / 1,309 / 562 (20.4 % / 5.3 % / 2.3 %) patients exist having 2 / 3 / 4+ malignancies.

The increases of incident cases in 2002 and 2007 reflect the expansion to additional registry areas.

Please be aware that data of recent annual patient cohorts may not yet be fully processed. The years under evaluation can be retrieved from the respective headings.

How to interpret:

In 2017, a subgroup of 1,290 cases has been diagnosed, of which 17.9 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 5.0 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 2

Incidence measures by year of diagnosis
(with respect to registry area expansion from 2.65 to 4.10 m as of 2002,
and from 4.10 to 4.92 m as of 2007, respectively)

Year of diagnosis	Males n	Females n	Males Inc. raw	Fem. Inc. raw	Males Inc. WS	Fem. Inc. WS	Males Inc. ES	Fem. Inc. ES	Males Inc. BRD-S	Fem. Inc. BRD-S
1998	279	299	25.2	25.4	15.4	15.7	22.9	20.5	29.9	23.4
1999	307	324	27.4	27.3	16.6	16.5	24.2	21.9	31.5	24.6
2000	305	347	26.8	28.9	15.9	17.3	23.7	23.0	30.7	26.1
2001	288	380	24.9	31.2	14.4	19.9	21.7	26.1	28.7	29.0
2002	481	563	25.8	28.8	14.7	17.9	21.9	23.5	28.1	26.5
2003	536	648	28.6	32.9	16.2	20.7	23.6	26.7	29.9	29.7
2004	680	903	36.1	45.7	20.0	27.7	29.4	35.9	37.9	40.4
2005	706	981	37.3	49.3	19.9	30.6	29.7	39.1	39.0	43.9
2006	696	1028	36.3	51.2	19.5	33.0	28.6	41.6	36.5	46.6
2007	873	1241	39.4	53.7	20.4	35.6	30.5	43.8	39.7	49.1
2008	869	1443	39.0	62.2	19.8	41.3	29.4	50.9	37.9	56.6
2009	973	1505	43.6	64.7	21.8	44.3	32.4	53.8	42.3	59.8
2010	1129	1696	50.1	72.5	24.2	49.2	36.2	60.0	48.0	66.9
2011	1074	1769	48.0	75.7	22.6	53.4	34.0	64.2	44.8	71.0
2012	1174	1736	51.7	73.6	24.5	48.2	36.7	59.2	47.7	66.4
2013	1259	2031	54.7	85.2	25.8	60.3	38.5	71.7	50.4	79.5
2014	1106	1780	47.4	73.9	21.1	50.4	32.2	60.7	43.0	67.6
2015	925	1440	38.9	59.2	17.1	38.5	26.2	48.0	35.2	53.2
2016	855	1377	35.6	56.1	15.7	36.6	23.8	45.3	32.0	50.5
2017	805	1290	33.4	52.3	15.0	34.5	22.4	42.7	29.7	47.5
2018	871	1352	35.8	54.5	15.3	35.2	23.4	43.7	31.4	48.9
2019	817	1334	33.6	53.7	14.4	33.7	22.0	42.5	29.5	47.5
1998-2019	17008	25467	38.6	55.6	19.1	36.6	28.6	45.3	37.5	50.6

The computation of the incidence measures includes all cancers, irrespective of first or subsequent malignancy.

Table 3

Age distribution parameters by year of diagnosis (ALL PATIENTS)

Year of diagnosis	Cases n	Std.		Median						
		Mean	dev.	Min.	Max.	10%	25%	50%	75%	90%
1998	578	62.3	15.1	19.5	98.1	40.5	52.6	63.3	74.3	80.7
1999	631	62.1	15.4	11.8	96.7	39.6	53.9	62.4	73.0	81.3
2000	652	62.8	14.9	22.8	94.0	40.4	54.0	64.2	74.0	80.1
2001	668	61.7	14.8	24.2	93.0	39.6	52.6	62.4	73.2	79.7
2002	1044	62.7	15.0	19.9	95.6	41.0	53.3	64.0	74.0	80.6
2003	1184	61.5	15.3	18.1	95.2	38.2	51.4	63.8	73.0	79.7
2004	1583	62.5	15.9	18.8	96.9	37.8	52.7	64.7	74.5	81.6
2005	1687	62.2	16.5	17.1	99.1	37.0	50.3	64.8	74.8	82.1
2006	1724	61.3	16.3	16.2	97.4	36.8	50.3	64.4	72.9	81.1
2007	2114	61.1	17.5	13.7	96.5	34.1	47.5	65.1	74.0	82.1
2008	2312	60.5	17.7	16.0	100	33.6	46.6	64.7	73.1	82.1
2009	2478	60.2	18.0	15.4	96.5	31.8	45.7	64.2	73.9	81.4
2010	2825	60.8	18.0	17.8	97.7	32.4	47.5	65.0	74.5	81.7
2011	2843	59.4	18.4	18.8	98.6	31.3	44.4	63.3	73.7	81.4
2012	2910	61.6	18.1	12.1	102	32.8	48.0	65.7	75.5	82.7
2013	3290	59.2	19.3	16.0	101	30.5	42.4	63.1	74.9	83.1
2014	2886	60.6	19.2	18.4	101	31.4	44.2	65.3	75.9	83.4
2015	2365	61.9	18.1	19.3	102	33.4	49.0	65.6	76.3	82.8
2016	2232	62.0	17.9	17.7	96.9	33.6	49.1	65.5	76.4	82.6
2017	2095	61.5	18.0	0.4	97.4	33.8	48.4	65.0	76.5	82.2
2018	2223	62.6	17.8	18.6	103	33.9	50.1	66.1	77.2	83.0
2019	2151	62.9	17.5	20.4	101	35.5	50.5	66.2	77.4	82.8
1998-2019	42475	61.2	17.7	0.4	103	33.6	48.3	64.7	75.1	82.1

Table 3a

Age distribution parameters by year of diagnosis (MALES)

Year of diagnosis	Cases n	Std.		Median						
		Mean	dev.	Min.	Max.	10%	25%	50%	75%	90%
1998	279	66.2	12.3	28.9	92.2	50.1	57.9	67.7	75.8	82.0
1999	307	65.2	14.2	18.9	94.7	48.3	57.9	65.6	75.6	82.5
2000	305	67.2	12.0	29.8	94.0	51.0	59.9	68.5	75.9	82.8
2001	288	67.5	12.3	25.9	92.9	52.6	60.2	68.3	76.5	82.2
2002	481	67.3	11.7	25.1	93.1	54.0	60.2	67.5	76.0	81.5
2003	536	66.3	12.3	18.1	92.0	49.2	60.0	67.5	75.1	81.0
2004	680	67.4	12.6	23.3	93.9	49.7	60.7	68.7	76.2	82.5
2005	706	68.5	13.0	18.4	99.1	52.5	62.2	70.1	77.3	83.2
2006	696	67.9	12.2	18.3	94.9	51.8	62.0	68.9	76.2	83.0
2007	873	68.9	12.0	13.7	93.9	52.8	62.3	69.9	77.6	83.3
2008	869	68.8	11.8	16.0	97.8	51.4	63.4	69.7	76.9	83.1
2009	973	69.0	12.4	22.8	96.5	52.1	62.3	70.7	77.8	83.0
2010	1129	69.8	11.9	17.8	96.6	53.8	63.6	71.6	78.1	83.3
2011	1074	70.3	11.9	24.8	98.6	53.9	64.3	71.9	78.6	84.0
2012	1174	70.2	11.9	29.5	100	53.4	64.1	71.6	78.1	84.2
2013	1259	70.2	13.0	16.0	101	51.9	63.5	72.5	79.2	85.1
2014	1106	71.5	12.1	19.6	98.5	54.9	66.0	73.4	79.7	85.1
2015	925	71.5	12.5	23.7	102	53.1	65.2	74.5	80.0	85.1
2016	855	71.7	11.8	20.5	95.5	54.7	65.0	74.3	79.7	84.6
2017	805	71.4	12.3	0.4	97.4	53.7	65.0	73.8	79.7	84.2
2018	871	72.2	11.7	22.3	103	56.4	65.7	74.7	79.9	84.8
2019	817	72.1	11.7	24.8	101	55.9	64.5	74.6	80.0	84.9
1998-2019	17008	69.7	12.3	0.4	103	53.0	62.9	71.5	78.3	83.9

Table 3b

Age distribution parameters by year of diagnosis (FEMALES)

Year of diagnosis	Cases n	Std.		Min.	Max.	Median				
		Mean	dev.			10%	25%	50%	75%	90%
1998	299	58.6	16.4	19.5	98.1	34.8	47.1	59.3	70.9	80.2
1999	324	59.1	16.0	11.8	96.7	35.2	49.2	59.2	71.4	80.2
2000	347	58.8	16.1	22.8	91.8	34.9	46.2	59.5	71.9	79.4
2001	380	57.4	15.1	24.2	93.0	35.8	47.2	57.8	69.1	76.5
2002	563	58.8	16.3	19.9	95.6	35.7	46.8	59.2	72.0	79.7
2003	648	57.6	16.4	20.9	95.2	35.3	44.6	59.2	69.4	78.9
2004	903	58.8	17.1	18.8	96.9	34.1	44.5	61.6	70.9	80.8
2005	981	57.6	17.3	17.1	95.2	33.7	42.5	59.7	70.3	81.0
2006	1028	56.9	17.2	16.2	97.4	32.3	43.0	59.2	69.2	79.9
2007	1241	55.6	18.6	17.7	96.5	29.7	39.2	57.2	70.1	80.4
2008	1443	55.5	18.7	17.7	100	29.4	39.4	56.0	69.8	81.2
2009	1505	54.4	18.7	15.4	95.9	28.9	38.0	55.7	69.1	79.4
2010	1696	54.8	18.9	18.1	97.7	29.0	37.9	55.3	70.1	79.8
2011	1769	52.9	18.5	18.8	97.8	28.8	35.8	51.5	68.5	77.8
2012	1736	55.8	19.3	12.1	102	29.7	39.0	55.7	72.0	81.1
2013	2031	52.4	19.4	17.4	98.3	28.6	34.1	50.6	69.4	79.3
2014	1780	53.7	19.7	18.4	101	29.1	35.4	51.2	71.7	80.5
2015	1440	55.8	18.4	19.3	98.1	31.0	39.3	55.8	70.9	79.5
2016	1377	55.9	18.4	17.7	96.9	30.0	40.4	55.4	71.8	80.2
2017	1290	55.3	18.1	18.7	95.6	30.5	39.4	54.9	71.1	79.2
2018	1352	56.4	18.4	18.6	101	30.5	40.7	56.6	72.0	80.7
2019	1334	57.3	18.1	20.4	98.5	31.5	42.2	57.3	72.5	80.7
1998-2019	25467	55.6	18.4	11.8	102	30.2	39.5	56.1	70.5	80.0

Table 4

Age distribution by 5-year age group and sex for period 2007-2019

Age at diagnosis Years	Cases			Males			Females		
	n	%	Cum.%	n	%	Cum.%	n	%	Cum.%
0-4	1	0.0	0.0	1	0.0	0.0			0.0
5-9	0	0.0	0.0			0.0			0.0
10-14	2	0.0	0.0	1	0.0	0.0	1	0.0	0.0
15-19	46	0.1	0.1	8	0.1	0.1	38	0.2	0.2
20-24	488	1.5	1.6	17	0.1	0.2	471	2.4	2.6
25-29	1705	5.2	6.9	39	0.3	0.5	1666	8.3	10.9
30-34	1974	6.0	12.9	67	0.5	1.0	1907	9.5	20.4
35-39	1613	4.9	17.8	123	1.0	2.0	1490	7.5	27.9
40-44	1644	5.0	22.8	225	1.8	3.8	1419	7.1	35.0
45-49	1793	5.5	28.3	380	3.0	6.8	1413	7.1	42.0
50-54	2246	6.9	35.2	593	4.7	11.4	1653	8.3	50.3
55-59	2234	6.8	42.0	836	6.6	18.0	1398	7.0	57.3
60-64	2670	8.2	50.2	1137	8.9	26.9	1533	7.7	65.0
65-69	3655	11.2	61.3	1810	14.2	41.1	1845	9.2	74.2
70-74	4098	12.5	73.9	2376	18.7	59.8	1722	8.6	82.8
75-79	3796	11.6	85.5	2375	18.7	78.5	1421	7.1	89.9
80-84	2710	8.3	93.7	1652	13.0	91.4	1058	5.3	95.2
85+	2049	6.3	100.0	1090	8.6	100.0	959	4.8	100.0
All ages	32724	100.0		12730	100.0		19994	100.0	

Table 5

Age-specific incidence
for period 2007-2019

Age at diagnosis Years	Males n	Females n	Males Age- spec. incid.	Females Age- spec. incid.
0- 4	1		0.1	
5- 9				
10-14	1	1	0.1	0.1
15-19	8	37	0.5	2.5
20-24	17	466	0.9	26.4
25-29	38	1657	1.8	79.9
30-34	66	1898	3.1	90.0
35-39	121	1476	5.7	70.2
40-44	222	1401	9.5	61.9
45-49	370	1394	14.7	57.3
50-54	581	1636	24.8	70.8
55-59	822	1380	42.3	69.0
60-64	1113	1509	68.2	86.0
65-69	1752	1819	115.2	108.0
70-74	2302	1662	164.3	103.5
75-79	2266	1375	204.7	99.9
80-84	1578	1012	240.4	104.0
85+	1033	906	242.2	93.9
All ages	12291	19629		
Incidence				
Raw			40.8	63.1
WS			19.1	42.5
ES			28.7	52.0
BRD-S			37.7	57.8

The age-specific incidence characterizes the disease risk in a particular age group. The age distribution depends on the patient population frequency in each age group and reflects the tangible clinical picture of everyday patients care (see following chart).

ICD-10 D00-D09: In situ neoplasms

Age distribution and age-specific incidence 2007 - 2019 (Males: 12291, Females: 19629)

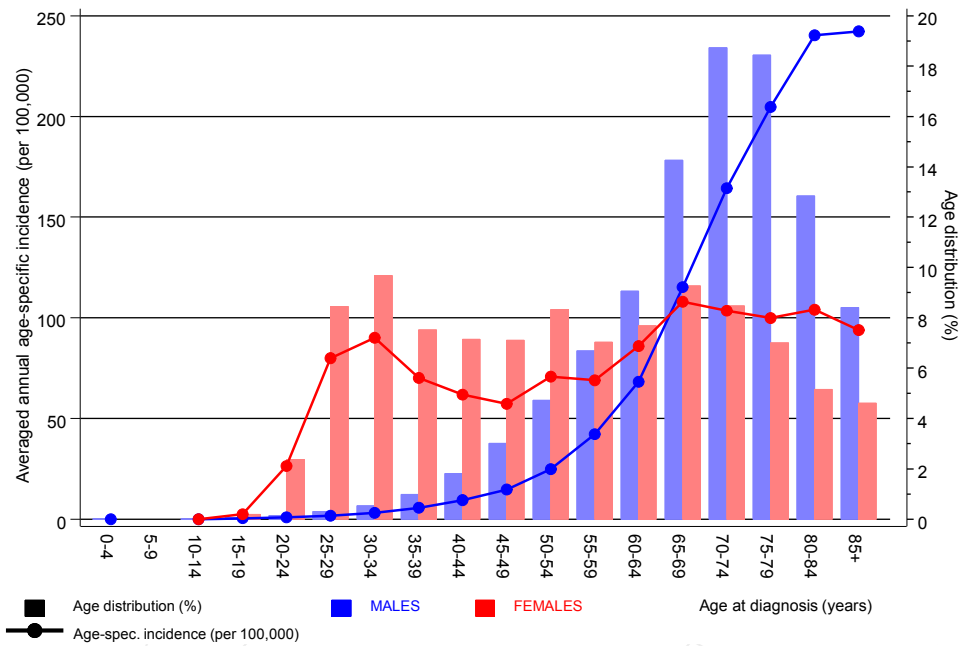


Figure 6. Age distribution (males: mean=70.4 yrs, median=72.3 yrs; females: mean=54.7 yrs, median=54.5 yrs) and age-specific incidence.

Table 7a

Standardized incidence ratio (SIR, with 95% confidence limits),
excess absolute risk (EAR) and DCO rate of further malignancies
for period 1998-2019

MALES

Diagnosis	Observed n	Expected n	SIR	CI 95%	CI 95%	EAR	DCO %
C00 Lip	10	1.4	7.2	3.5	13.2 #	1.4	
C03-C06 Oral cavity	35	8.2	4.3	3.0	5.9 #	4.2	2.9
C07-C08 Salivary gland	6	2.9	2.0	0.7	4.4	0.5	
C09-C10 Oropharynx	34	9.7	3.5	2.4	4.9 #	3.8	2.9
C12-C13 Hypopharynx	17	5.3	3.2	1.9	5.1 #	1.9	5.9
C15 Oesophagus	66	21.3	3.1	2.4	3.9 #	7.1	4.5
C16 Stomach	100	50.2	2.0	1.6	2.4 #	7.9	3.0
C17 Small intestine	26	7.0	3.7	2.4	5.4 #	3.0	3.8
C18 Colon	270	120.9	2.2	2.0	2.5 #	23.6	5.6
C19-C20 Rectum	137	60.5	2.3	1.9	2.7 #	12.1	
C21 Anus/canal	11	2.7	4.1	2.0	7.3 #	1.3	
C22 Liver	89	33.7	2.6	2.1	3.3 #	8.8	14.6
C23-C24 Bile	33	13.0	2.5	1.7	3.6 #	3.2	24.2
C25 Pancreas	104	48.6	2.1	1.7	2.6 #	8.8	17.3
C32 Larynx	56	10.6	5.3	4.0	6.8 #	7.2	7.1
C33-C34 Lung	430	137.0	3.1	2.8	3.4 #	46.4	9.5
C38,C45 Mesothelioma	14	8.5	1.6	0.9	2.8	0.9	
C43 Malign. melanoma	477	51.6	9.2	8.4	10.1 #	67.4	0.4
C46,C49 Soft tissue	25	7.0	3.6	2.3	5.3 #	2.9	
C50 Breast	11	3.3	3.4	1.7	6.0 #	1.2	
C60 Penis	19	3.1	6.1	3.7	9.5 #	2.5	10.5
C61 Prostate	1042	328.1	3.2	3.0	3.4 #	113.2	5.3
C62 Testis	31	2.2	13.9	9.4	19.7 #	4.6	
C64 Kidney	116	39.2	3.0	2.4	3.6 #	12.2	10.3
C65 Renal pelvis	141	5.6	25.3	21.3	29.8 #	21.5	
C66 Ureter	102	3.3	30.7	25.1	37.3 #	15.6	
C67 Bladder	541	61.6	8.8	8.1	9.6 #	76.0	0.7
C68 Urethra	42	1.2	36.0	25.9	48.7 #	6.5	
C70-C72 CNS cancer	31	14.2	2.2	1.5	3.1 #	2.7	6.5
C73 Thyroid	20	6.4	3.1	1.9	4.8 #	2.2	
C76-C79 CUP	44	21.2	2.1	1.5	2.8 #	3.6	
C81 Hodgkin lymphoma	7	2.5	2.7	1.1	5.7 #	0.7	14.3
C82-C85 NHL	123	52.4	2.3	2.0	2.8 #	11.2	7.3
C90 Mult. myeloma	30	16.4	1.8	1.2	2.6 #	2.2	16.7
C91-C96 Leukaemia	41	19.8	2.1	1.5	2.8 #	3.4	29.3
Others, specified	32	13.9	2.3	1.6	3.3 #	2.9	25.0
Not observed	0	0.7	0.0	0.0	5.2	-0.1	
All further malignancies	4313	1195.2	3.6	3.5	3.7 #	494.2	5.1

Patients	15383
Median age at next malignancy (years)	74.8
Person-years	63086
Mean observation time (years)	4.1
Median observation time (years)	2.7

The occurrence of further specified malignancy is statistically significant.

Further observed malignancies with count 1 to 5 are pooled in category "Others, specified".

Table 7b

Standardized incidence ratio (SIR, with 95% confidence limits),
excess absolute risk (EAR) and DCO rate of further malignancies
for period 1998–2019

FEMALES

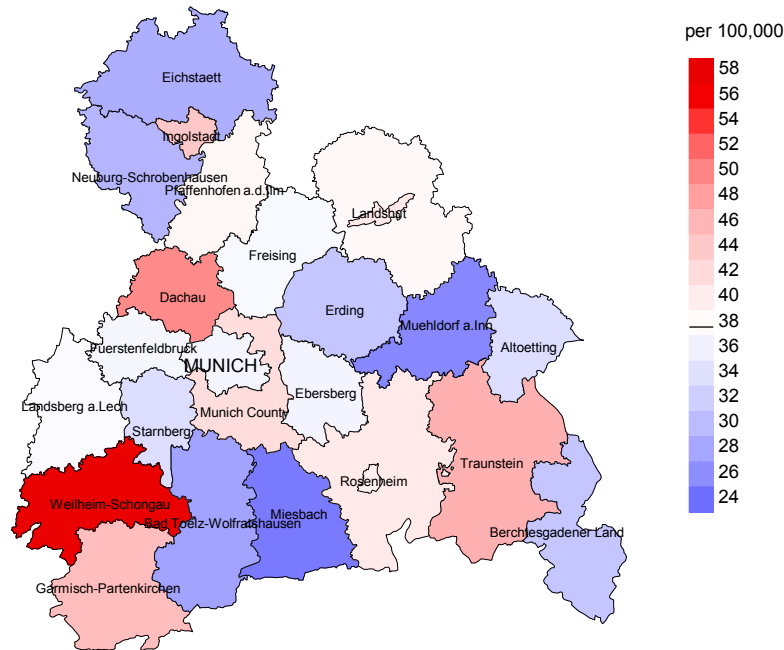
Diagnosis	Observed n	Expected n	SIR	CI 95%	CI 95%	EAR	DCO %
C03-C06 Oral cavity	17	4.6	3.7	2.2	6.0 #	1.4	
C12-C13 Hypopharynx	7	0.9	7.9	3.2	16.3 #	0.7	
C15 Oesophagus	25	5.0	5.0	3.2	7.3 #	2.3	
C16 Stomach	57	24.7	2.3	1.7	3.0 #	3.6	7.0
C17 Small intestine	20	4.2	4.8	2.9	7.4 #	1.8	
C18 Colon	178	70.5	2.5	2.2	2.9 #	12.1	3.9
C19-C20 Rectum	86	29.3	2.9	2.3	3.6 #	6.4	2.3
C21 Anus/canal	42	4.3	9.7	7.0	13.2 #	4.3	
C22 Liver	21	9.2	2.3	1.4	3.5 #	1.3	28.6
C23-C24 Bile	28	10.2	2.7	1.8	4.0 #	2.0	17.9
C25 Pancreas	105	34.5	3.0	2.5	3.7 #	8.0	22.9
C30-C31 Sinuses	6	1.1	5.4	2.0	11.8 #	0.6	
C32 Larynx	9	1.4	6.4	2.9	12.2 #	0.9	
C33-C34 Lung	214	57.7	3.7	3.2	4.2 #	17.7	3.7
C43 Malign. melanoma	287	32.1	8.9	7.9	10.0 #	28.8	
C46,C49 Soft tissue	16	4.5	3.6	2.0	5.8 #	1.3	
C48 Peritoneal	8	3.1	2.6	1.1	5.1 #	0.6	
C50 Breast	1285	245.9	5.2	4.9	5.5 #	117.5	1.1
C51 Vulva	64	8.1	7.9	6.1	10.1 #	6.3	
C52 Vagina	14	1.4	9.9	5.4	16.6 #	1.4	
C53 Cervix uteri	81	12.5	6.5	5.2	8.1 #	7.7	4.9
C54 Corpus uteri	119	41.9	2.8	2.4	3.4 #	8.7	1.7
C55,C57 Fem. genitals un	5	1.6	3.2	1.0	7.5 #	0.4	40.0
C56 Ovary	100	30.5	3.3	2.7	4.0 #	7.9	6.0
C64 Kidney	50	17.3	2.9	2.2	3.8 #	3.7	10.0
C65 Renal pelvis	57	2.3	24.8	18.8	32.1 #	6.2	
C66 Ureter	39	1.2	32.4	23.0	44.2 #	4.3	
C67 Bladder	134	14.4	9.3	7.8	11.0 #	13.5	2.2
C70-C72 CNS cancer	20	10.1	2.0	1.2	3.1 #	1.1	20.0
C73 Thyroid	26	15.8	1.6	1.1	2.4 #	1.1	
C76-C79 CUP	30	13.7	2.2	1.5	3.1 #	1.8	6.7
C82-C85 NHL	92	29.5	3.1	2.5	3.8 #	7.1	5.4
C90 Mult. myeloma	21	9.1	2.3	1.4	3.5 #	1.4	14.3
C91-C96 Leukaemia	30	11.3	2.6	1.8	3.8 #	2.1	23.3
Others, specified	29	14.0	2.1	1.4	3.0 #	1.7	13.8
Not observed	0	1.9	0.0	0.0	2.0	-0.2	
All further malignancies	3322	779.6	4.3	4.1	4.4 #	287.4	3.5

Patients	23291
Median age at next malignancy (years)	69.8
Person-years	88452
Mean observation time (years)	3.8
Median observation time (years)	2.1

The occurrence of further specified malignancy is statistically significant.

Further observed malignancies with count 1 to 4 are pooled in category "Others, specified".

Average incidence (Germany 1987 standard population) 2007 - 2019: Males



Average incidence (Germany 1987 standard population) 2007 - 2019: Females

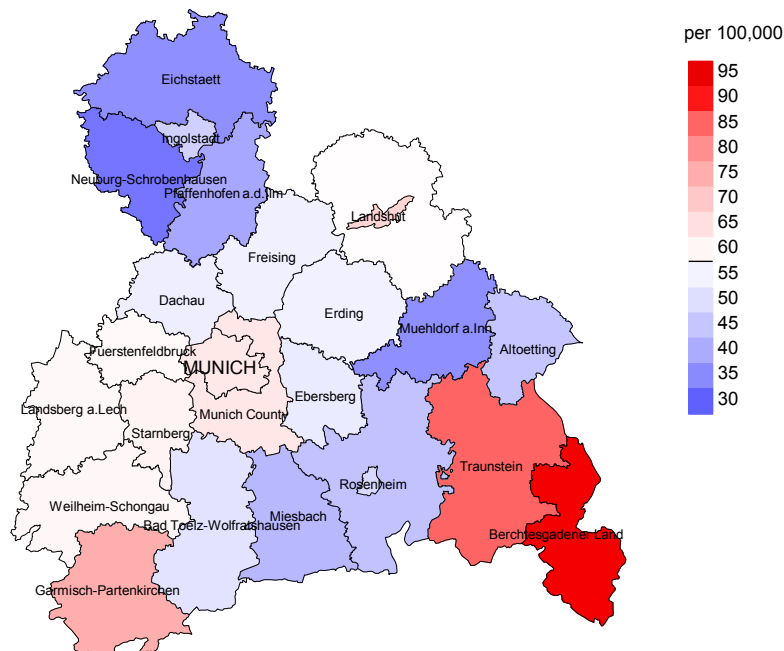
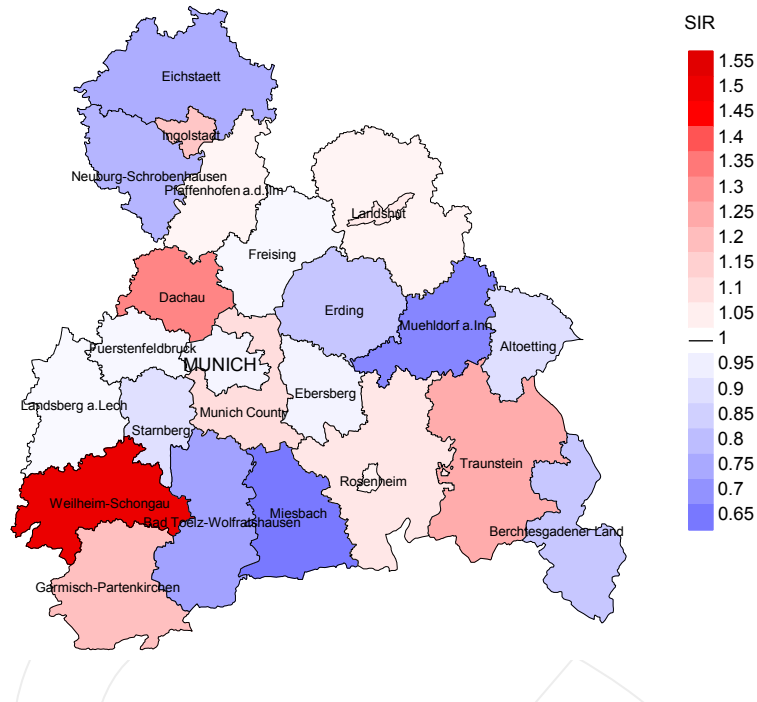


Figure 8a. Map of cancer incidence (german standard population) by county averaged for period 2007 to 2019. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 37.7/100,000 WS N=12,291, females 57.8/100,000 WS N=19,629).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,462 female residents (averaged) in the period from 2007 to 2019 a total of 492 women were identified with newly diagnosed in situ neoplasms. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 53.2/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 47.0 and 59.9/100,000.

Standardized incidence ratio (SIR) 2007 - 2019: Males



Standardized incidence ratio (SIR) 2007 - 2019: Females

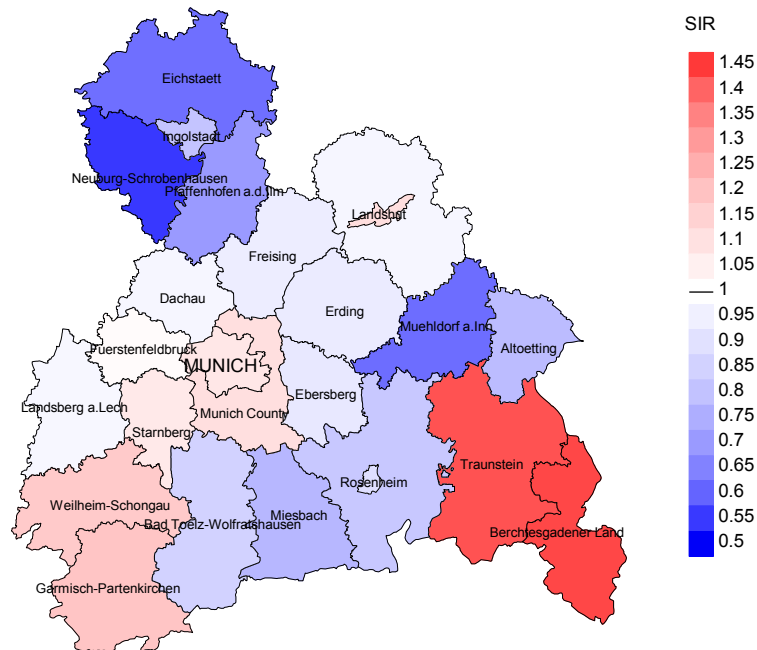


Figure 8b. Map of standardized incidence ratio (SIR) by county averaged for period 2007 to 2019. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=12,291, females N=19,629).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,153 female residents (averaged) in the period from 2007 to 2019 a total of 492 women were identified with newly diagnosed in situ neoplasms. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 0.92. Though, the value of this parameter may vary with an underlying probability of 99% between 0.82 and 1.03, and is therefore not statistically striking.

MORTALITY

Table 9a

Annual cohorts: Incident cancers, follow-up status,
and deaths among the annual cohorts

(with respect to registry area expansion from 2.65 to 4.10 m as of 2002,
and from 4.10 to 4.92 m as of 2007, respectively)

Year of diagnosis	Incident cases n	Prop. actively followed %	Deaths n	Prop. deaths %	Prop. deaths with death certific. %
1998	578	95.0	310	53.6	92.6
1999	631	95.6	318	50.4	93.7
2000	652	94.5	317	48.6	92.7
2001	668	94.0	296	44.3	94.6
2002	1044	95.4	491	47.0	91.6
2003	1184	93.6	487	41.1	92.4
2004	1583	93.7	644	40.7	93.0
2005	1687	93.2	633	37.5	92.3
2006	1724	89.3	600	34.8	90.2
2007	2114	86.7	728	34.4	91.2
2008	2312	97.1	678	29.3	89.7
2009	2478	96.4	703	28.4	92.2
2010	2825	96.3	696	24.6	89.5
2011	2843	96.4	632	22.2	88.4
2012	2910	96.7	660	22.7	84.2
2013	3290	95.0	607	18.4	85.7
2014	2886	91.4	556	19.3	85.6
2015	2365	89.0	364	15.4	83.5
2016	2232	98.5	272	12.2	76.8
2017	2095	99.3	190	9.1	64.7
2018	2223	99.0	136	6.1	53.7
2019	2151	59.0	68	3.2	75.0
1998-2019	42475	92.9	10386	24.5	88.6

Table 9b

Annual cohorts of incident cancers and deaths,
and cases deceased within the same year of being diagnosed with cancer

(with respect to registry area expansion from 2.65 to 4.10 m as of 2002,
and from 4.10 to 4.92 m as of 2007, respectively)

Year of diagnosis/ death	Incident cases n	Deaths n	Deaths in same year n	Prop. deaths in same year %
1998	578	135	9	1.6
1999	631	153	13	2.1
2000	652	157	10	1.5
2001	668	180	13	1.9
2002	1044	257	16	1.5
2003	1184	305	16	1.4
2004	1583	336	32	2.0
2005	1687	345	30	1.8
2006	1724	387	31	1.8
2007	2114	446	27	1.3
2008	2312	456	32	1.4
2009	2478	505	39	1.6
2010	2825	615	33	1.2
2011	2843	673	51	1.8
2012	2910	718	55	1.9
2013	3290	825	43	1.3
2014	2886	855	61	2.1
2015	2365	924	55	2.3
2016	2232	975	57	2.6
2017	2095	1011	50	2.4
2018	2223	797	29	1.3
2019	2151	765	26	1.2
1998-2019	42475	11820	728	1.7

Table 9c

Annual cohorts of deaths, and proportion of cancer-related and non-cancer-related deaths

(with respect to registry area expansion from 2.65 to 4.10 m as of 2002, and from 4.10 to 4.92 m as of 2007, respectively)

Year of death	Deaths n	Prop. cancer- related %	Prop. non-cancer- related %	Prop. cancer recorded on death certificate %
1998	135	43.0	57.0	59.3
1999	153	37.3	62.7	55.3
2000	157	45.2	54.8	53.5
2001	180	38.9	61.1	54.4
2002	257	47.1	52.9	62.6
2003	305	44.9	55.1	60.8
2004	336	48.5	51.5	62.6
2005	345	53.0	47.0	61.9
2006	387	53.5	46.5	66.8
2007	446	51.6	48.4	65.0
2008	456	48.0	52.0	57.7
2009	505	45.5	54.5	56.5
2010	615	44.2	55.8	57.1
2011	673	45.2	54.8	58.5
2012	718	47.5	52.5	59.4
2013	825	43.8	56.2	55.8
2014	855	46.8	53.2	59.8
2015	924	41.9	58.1	53.8
2016	975	44.4	55.6	54.8
2017	1011	41.2	58.8	52.4
2018	797	16.8	83.2	48.4
2019	765	16.6	83.4	52.0
1998–2019	11820	41.6	58.4	57.2

Table 10a

Medians of age at death according to the grouping in Table 9
MALES

Year of death	Deaths n	Age at death (all causes) Years	Age at death (cancer-related) Years	Age at death (non-cancer-related) Years	Age at death (according to death certificate) Years
1998	86	78.8	81.0	78.2	78.7
1999	80	78.3	78.2	78.3	76.7
2000	100	78.6	73.5	81.0	74.3
2001	113	79.8	75.5	80.8	75.6
2002	172	79.4	76.0	82.5	77.6
2003	184	78.7	74.4	81.1	76.3
2004	191	79.8	77.0	84.1	78.7
2005	197	80.4	78.1	82.2	79.3
2006	229	78.5	76.9	79.7	76.3
2007	277	79.7	78.2	80.7	79.1
2008	276	80.5	78.6	82.1	79.0
2009	300	81.0	78.6	81.8	80.1
2010	371	81.9	78.4	84.4	80.0
2011	408	81.3	79.9	83.2	80.4
2012	465	81.9	80.0	83.6	80.4
2013	502	81.9	78.8	84.6	79.8
2014	543	81.9	79.4	83.6	80.0
2015	521	82.5	79.2	84.7	79.8
2016	568	82.5	80.3	84.2	80.9
2017	601	82.7	79.8	84.5	80.6
2018	482	82.8	79.5	83.6	80.2
2019	446	83.5	80.6	83.9	81.5
1998-2019	7112	81.5	78.8	83.4	79.6

Deaths of patients are considered to be cancer-related, in case that fact was recorded on the death certificate, or patients had suffered from metastasis or recurrence.

Table 10b

Medians of age at death according to the grouping in Table 9
FEMALES

Year of death	Deaths n	Age at death (all causes) Years	Age at death (cancer-related) Years	Age at death (non-cancer-related) Years	Age at death (according to death certificate) Years
1998	49	83.3	75.4	85.7	80.2
1999	73	79.2	76.5	82.6	77.5
2000	57	85.0	79.0	87.0	79.7
2001	67	82.1	76.6	83.5	78.1
2002	85	83.0	76.3	86.3	80.0
2003	121	81.1	66.5	85.4	73.1
2004	145	81.8	72.5	85.1	74.9
2005	148	80.6	76.3	83.4	78.6
2006	158	80.7	76.9	83.1	78.2
2007	169	82.0	78.2	86.3	78.2
2008	180	82.4	76.7	86.7	79.9
2009	205	83.7	74.8	86.9	76.2
2010	244	82.7	76.6	85.9	77.6
2011	265	83.0	76.6	86.5	78.5
2012	253	83.6	77.3	86.8	78.9
2013	323	83.3	75.3	86.6	77.8
2014	312	81.8	75.1	87.2	76.2
2015	403	84.3	78.7	87.0	79.7
2016	407	84.7	77.3	86.9	78.8
2017	410	84.3	78.8	88.4	79.3
2018	315	83.3	77.1	84.2	80.0
2019	319	82.8	80.3	83.3	79.9
1998-2019	4708	82.9	76.9	85.9	78.5

By 2018, Bavarians' life expectancy at birth is estimated at 79.3 years for boys and 83.8 years for girls.

Deaths of patients are considered to be cancer-related, in case that fact was recorded on the death certificate, or patients had suffered from metastasis or recurrence.

Table 11a

Mortality measures (cancer-related death) and mortality-incidence-index
by year of death

MALES

Year of death	Deaths n	Mort. raw	MI-Index raw	Mort. WS	MI-Index WS	Mort. ES	MI-Index ES	Mort. BRD-S	MI-Index BRD-S
1998	36	3.2	0.13	1.8	0.12	3.1	0.14	4.6	0.15
1999	28	2.5	0.09	1.3	0.08	2.3	0.10	3.3	0.11
2000	50	4.4	0.17	2.5	0.16	4.0	0.17	5.8	0.19
2001	44	3.8	0.15	2.0	0.14	3.4	0.16	4.8	0.17
2002	86	4.6	0.18	2.4	0.16	4.0	0.18	5.7	0.20
2003	82	4.4	0.15	2.2	0.14	3.6	0.16	5.1	0.17
2004	97	5.2	0.14	2.4	0.12	4.1	0.14	6.0	0.16
2005	104	5.5	0.15	2.4	0.12	4.2	0.14	6.4	0.17
2006	127	6.6	0.19	2.9	0.15	4.9	0.18	7.6	0.21
2007	136	6.1	0.16	2.7	0.14	4.6	0.16	6.7	0.17
2008	137	6.2	0.16	2.5	0.13	4.3	0.15	6.7	0.18
2009	138	6.2	0.15	2.6	0.12	4.3	0.14	6.3	0.15
2010	161	7.1	0.15	2.8	0.12	4.8	0.14	7.1	0.15
2011	190	8.5	0.18	3.3	0.15	5.7	0.17	8.2	0.19
2012	238	10.5	0.21	3.9	0.16	6.7	0.19	10.1	0.22
2013	218	9.5	0.18	3.6	0.14	6.0	0.16	8.9	0.18
2014	261	11.2	0.24	4.0	0.19	7.0	0.22	10.1	0.24
2015	237	10.0	0.27	3.5	0.21	6.1	0.24	8.9	0.26
2016	274	11.4	0.33	3.9	0.26	6.8	0.29	9.9	0.32
2017	252	10.4	0.33	3.7	0.25	6.2	0.29	9.0	0.32
2018	85	3.5	0.10	1.2	0.08	2.0	0.09	3.0	0.10
2019	78	3.2	0.10	1.1	0.08	1.8	0.09	2.7	0.10
1998-2019	3059	6.9	0.19	2.8	0.15	4.8	0.17	7.0	0.19

Table 11b

Mortality measures (cancer-related death) and mortality-incidence-index
by year of death
FEMALES

Year of death	Deaths n	Mort. raw	MI-Index raw	Mort. WS	MI-Index WS	Mort. ES	MI-Index ES	Mort. BRD-S	MI-Index BRD-S
1998	22	1.9	0.07	0.8	0.05	1.2	0.06	1.5	0.07
1999	29	2.4	0.09	1.0	0.06	1.5	0.07	1.9	0.08
2000	21	1.7	0.06	0.6	0.03	1.0	0.04	1.3	0.05
2001	27	2.2	0.07	0.8	0.04	1.3	0.05	1.7	0.06
2002	35	1.8	0.06	0.7	0.04	1.1	0.05	1.4	0.05
2003	55	2.8	0.09	1.3	0.06	1.8	0.07	2.2	0.08
2004	66	3.3	0.07	1.4	0.05	2.1	0.06	2.6	0.06
2005	79	4.0	0.08	1.5	0.05	2.3	0.06	3.0	0.07
2006	80	4.0	0.08	1.5	0.05	2.3	0.06	3.0	0.07
2007	94	4.1	0.08	1.4	0.04	2.3	0.05	3.2	0.06
2008	83	3.6	0.06	1.3	0.03	2.0	0.04	2.6	0.05
2009	92	4.0	0.06	1.5	0.04	2.4	0.05	3.1	0.05
2010	112	4.8	0.07	1.7	0.04	2.7	0.04	3.6	0.05
2011	115	4.9	0.07	1.7	0.03	2.6	0.04	3.5	0.05
2012	103	4.4	0.06	1.6	0.03	2.5	0.04	3.3	0.05
2013	143	6.0	0.07	2.2	0.04	3.3	0.05	4.3	0.06
2014	140	5.8	0.08	2.1	0.04	3.2	0.05	4.3	0.07
2015	154	6.3	0.11	2.1	0.06	3.3	0.07	4.4	0.08
2016	161	6.6	0.12	2.2	0.06	3.5	0.08	4.5	0.09
2017	167	6.8	0.13	2.1	0.06	3.4	0.08	4.6	0.10
2018	53	2.1	0.04	0.8	0.02	1.2	0.03	1.5	0.03
2019	49	2.0	0.04	0.6	0.02	0.9	0.02	1.3	0.03
1998-2019	1880	4.1	0.08	1.5	0.04	2.3	0.05	3.0	0.06

Table 12

Age distribution of age at death (cancer-related) for period 2007-2019
(incl. multiple malignancies)

Age at death Years	Cases			Males			Females		
	n	%	Cum.%	n	%	Cum.%	n	%	Cum.%
0-4									
5-9									
10-14									
15-19									
20-24									
25-29	2	0.1	0.1			0.0	2	0.1	0.1
30-34	4	0.1	0.2			0.0	4	0.3	0.4
35-39	7	0.2	0.3	1	0.0	0.0	6	0.4	0.8
40-44	18	0.5	0.8	1	0.0	0.1	17	1.2	2.0
45-49	39	1.0	1.8	9	0.4	0.5	30	2.0	4.0
50-54	76	2.0	3.8	20	0.8	1.3	56	3.8	7.8
55-59	131	3.4	7.2	49	2.0	3.3	82	5.6	13.4
60-64	196	5.1	12.2	107	4.4	7.8	89	6.1	19.5
65-69	354	9.1	21.4	215	8.9	16.7	139	9.5	29.0
70-74	588	15.2	36.6	369	15.3	32.1	219	14.9	43.9
75-79	732	18.9	55.5	492	20.5	52.5	240	16.4	60.3
80-84	734	19.0	74.4	496	20.6	73.1	238	16.2	76.5
85+	990	25.6	100.0	646	26.9	100.0	344	23.5	100.0
All ages	3871	100.0		2405	100.0		1466	100.0	

Table 13

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2019
(incl. multiple malignancies)

Age at death Years	Males n	Females n	Males Age- spec. mortal.	MI-index	Females Age- spec. mortal.	MI-index
0- 4						
5- 9						
10-14						
15-19						
20-24						
25-29		2			0.1	0.00
30-34		4			0.2	0.00
35-39	1	6	0.0	0.01	0.3	0.00
40-44	1	17	0.0	0.00	0.8	0.01
45-49	9	30	0.4	0.02	1.2	0.02
50-54	20	56	0.9	0.03	2.4	0.03
55-59	49	82	2.5	0.06	4.1	0.06
60-64	107	89	6.6	0.10	5.1	0.06
65-69	215	139	14.1	0.12	8.3	0.08
70-74	369	219	26.3	0.16	13.6	0.13
75-79	492	240	44.4	0.22	17.4	0.17
80-84	496	238	75.6	0.31	24.4	0.24
85+	646	344	151.5	0.63	35.6	0.38
All ages	2405	1466				
Mortality						
Raw			8.0	0.20	4.7	0.07
WS			3.0	0.15	1.6	0.04
ES			5.1	0.18	2.5	0.05
BRD-S			7.5	0.20	3.4	0.06
PYLL-70						
per 100,000			9.7		17.5	
ES			8.1		14.6	
AYLL-70			6.4		10.8	

Table 14a

Further malignancies in deaths in period 1998-2019
MALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn- chron ±30d n	Syn- chron ±30d ←%	Post n	Post ←%
C03-C06 Oral cavity	29	0.8	8	27.6	3	10.3	18	62.1
C07-C08 Salivary gland	7	0.2	1	14.3	1	14.3	5	71.4
C09-C10 Oropharynx	40	1.1	14	35.0	11	27.5	15	37.5
C12-C13 Hypopharynx	25	0.7	6	24.0	3	12.0	16	64.0
C15 Oesophagus	62	1.6	12	19.4	4	6.5	46	74.2
C16 Stomach	102	2.7	30	29.4	14	13.7	58	56.9
C17 Small intestine	18	0.5	3	16.7	5	27.8	10	55.6
C18 Colon	224	5.9	72	32.1	34	15.2	118	52.7
C19-C20 Rectum	128	3.4	57	44.5	21	16.4	50	39.1
C21 Anus/canal	7	0.2	3	42.9			4	57.1
C22 Liver	81	2.1	7	8.6	7	8.6	67	82.7
C23-C24 Bile	32	0.8	1	3.1	4	12.5	27	84.4
C25 Pancreas	109	2.9	9	8.3	10	9.2	90	82.6
C32 Larynx	40	1.1	16	40.0	6	15.0	18	45.0
C33-C34 Lung	464	12.3	51	11.0	28	6.0	385	83.0
C38,C45 Mesothelioma	18	0.5	2	11.1			16	88.9
C43 Malign. melanoma	147	3.9	35	23.8	41	27.9	71	48.3
C44 Skin others	405	10.7	35	8.6	64	15.8	306	75.6
C46,C49 Soft tissue	16	0.4	6	37.5			10	62.5
C50 Breast	8	0.2	3	37.5			5	62.5
C60 Penis	7	0.2	3	42.9	1	14.3	3	42.9
C61 Prostate	683	18.1	285	41.7	115	16.8	283	41.4
C64 Kidney	105	2.8	53	50.5	10	9.5	42	40.0
C65 Renal pelvis	117	3.1	35	29.9	26	22.2	56	47.9
C66 Ureter	85	2.3	24	28.2	20	23.5	41	48.2
C67 Bladder	409	10.8	93	22.7	49	12.0	267	65.3
C68 Urethra	19	0.5	1	5.3	4	21.1	14	73.7
C68 Urinary org.	7	0.2					7	100.0
C70-C72 CNS cancer	37	1.0	5	13.5			32	86.5
C73 Thyroid	15	0.4	7	46.7	1	6.7	7	46.7
C76-C79 CUP	59	1.6	3	5.1	13	22.0	43	72.9
C81 Hodgkin lymphoma	11	0.3	5	45.5			6	54.5
C82-C85 NHL	147	3.9	65	44.2	8	5.4	74	50.3
C90 Mult. myeloma	32	0.8	10	31.3	3	9.4	19	59.4
C91-C96 Leukaemia	46	1.2	4	8.7	3	6.5	39	84.8
Others, specified	36	1.0	13	36.1	3	8.3	20	55.6
All further malignancies	3777	100.0	977	25.9	512	13.6	2288	60.6

Further malignancies with number of cases 1 to 5 are pooled in category "Others, specified".

ICD-10 C44 (Other malignant neoplasms of skin) is not systematically recorded by MCR and therefore not considered for evaluation as a particular primary but at least as a further malignancy.

Table 14b

Further malignancies in deaths in period 1998-2019
FEMALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn- chron ±30d n	Syn- chron ±30d ←%	Post n	Post ←%
C03-C06 Oral cavity	14	0.7	4	28.6	1	7.1	9	64.3
C12-C13 Hypopharynx	6	0.3	3	50.0	1	16.7	2	33.3
C15 Oesophagus	18	0.9	4	22.2	3	16.7	11	61.1
C16 Stomach	46	2.3	7	15.2	6	13.0	33	71.7
C17 Small intestine	11	0.6	2	18.2	2	18.2	7	63.6
C18 Colon	114	5.8	26	22.8	13	11.4	75	65.8
C19-C20 Rectum	62	3.1	15	24.2	12	19.4	35	56.5
C21 Anus/canal	13	0.7	5	38.5			8	61.5
C22 Liver	22	1.1	3	13.6	3	13.6	16	72.7
C23-C24 Bile	26	1.3	4	15.4	3	11.5	19	73.1
C25 Pancreas	97	4.9	4	4.1	7	7.2	86	88.7
C30-C31 Sinuses	6	0.3	1	16.7			5	83.3
C33-C34 Lung	208	10.5	17	8.2	19	9.1	172	82.7
C43 Malign. melanoma	62	3.1	21	33.9	10	16.1	31	50.0
C44 Skin others	143	7.2	15	10.5	25	17.5	103	72.0
C46,C49 Soft tissue	13	0.7	3	23.1	1	7.7	9	69.2
C48 Peritoneal	6	0.3	1	16.7	1	16.7	4	66.7
C50 Breast	415	21.0	138	33.3	37	8.9	240	57.8
C51 Vulva	28	1.4	10	35.7	2	7.1	16	57.1
C52 Vagina	18	0.9	6	33.3	1	5.6	11	61.1
C53 Cervix uteri	51	2.6	24	47.1	9	17.6	18	35.3
C54 Corpus uteri	62	3.1	36	58.1	3	4.8	23	37.1
C55,C57 Fem. genitals un	6	0.3	1	16.7			5	83.3
C56 Ovary	82	4.1	22	26.8	10	12.2	50	61.0
C64 Kidney	31	1.6	12	38.7	3	9.7	16	51.6
C65 Renal pelvis	53	2.7	21	39.6	11	20.8	21	39.6
C66 Ureter	30	1.5	8	26.7	14	46.7	8	26.7
C67 Bladder	101	5.1	13	12.9	9	8.9	79	78.2
C70-C72 CNS cancer	18	0.9	3	16.7			15	83.3
C73 Thyroid	16	0.8	9	56.3			7	43.8
C76-C79 CUP	28	1.4	2	7.1	7	25.0	19	67.9
C81 Hodgkin lymphoma	9	0.5	8	88.9			1	11.1
C82-C85 NHL	71	3.6	34	47.9	3	4.2	34	47.9
C90 Mult. myeloma	24	1.2	4	16.7	3	12.5	17	70.8
C91-C96 Leukaemia	35	1.8	5	14.3			30	85.7
Others, specified	32	1.6	10	31.3	3	9.4	19	59.4
All further malignancies	1977	100.0	501	25.3	222	11.2	1254	63.4

Further malignancies with number of cases 1 to 5 are pooled in category "Others, specified".

ICD-10 C44 (Other malignant neoplasms of skin) is not systematically recorded by MCR and therefore not considered for evaluation as a particular primary but at least as a further malignancy.

Table 15

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2019
(First primaries only *)

Age at death Years	Males n	Females n	Males Age- spec. mortal.	MI-index	Females Age- spec. mortal.	MI-index
0- 4						
5- 9						
10-14						
15-19						
20-24						
25-29						
30-34		2			0.1	0.00
35-39	1	1	0.0	0.01	0.0	0.00
40-44		7			0.3	0.01
45-49	6	15	0.2	0.02	0.6	0.01
50-54	8	26	0.3	0.02	1.1	0.02
55-59	18	45	0.9	0.03	2.3	0.04
60-64	50	46	3.1	0.06	2.6	0.04
65-69	111	64	7.3	0.10	3.8	0.05
70-74	173	109	12.3	0.12	6.8	0.10
75-79	254	130	22.9	0.21	9.4	0.16
80-84	278	121	42.3	0.36	12.4	0.20
85+	366	203	85.8	0.75	21.0	0.39
All ages	1265	769				
Mortality						
Raw			4.2	0.17	2.5	0.05
WS			1.5	0.12	0.8	0.02
ES			2.7	0.14	1.3	0.03
BRD-S			3.9	0.17	1.7	0.04
PYLL-70						
per 100,000			4.5		8.2	
ES			3.7		6.8	
AYLL-70			6.1		10.5	

* See corresponding tables with multiple malignancies.

Table 16

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2019
(**Single primaries only ***)

Age at death Years	Males n	Females n	Males Age- spec. mortal.	MI-index	Females Age- spec. mortal.	MI-index
0- 4						
5- 9						
10-14						
15-19						
20-24						
25-29						
30-34		1			0.0	0.00
35-39	1		0.0	0.01		
40-44		2			0.1	0.00
45-49	2	1	0.1	0.01	0.0	0.00
50-54	4	7	0.2	0.01	0.3	0.01
55-59	6	3	0.3	0.01	0.2	0.00
60-64	9	9	0.6	0.01	0.5	0.01
65-69	29	9	1.9	0.03	0.5	0.01
70-74	31	19	2.2	0.03	1.2	0.02
75-79	49	29	4.4	0.05	2.1	0.04
80-84	98	32	14.9	0.17	3.3	0.06
85+	125	85	29.3	0.32	8.8	0.19
All ages	354	197				
Mortality						
Raw			1.2	0.06	0.6	0.01
WS			0.4	0.04	0.2	0.01
ES			0.7	0.05	0.3	0.01
BRD-S			1.1	0.06	0.4	0.01
PYLL-70						
per 100,000			1.4		1.4	
ES			1.2		1.2	
AYLL-70			7.1		11.4	

* See corresponding tables with multiple malignancies.

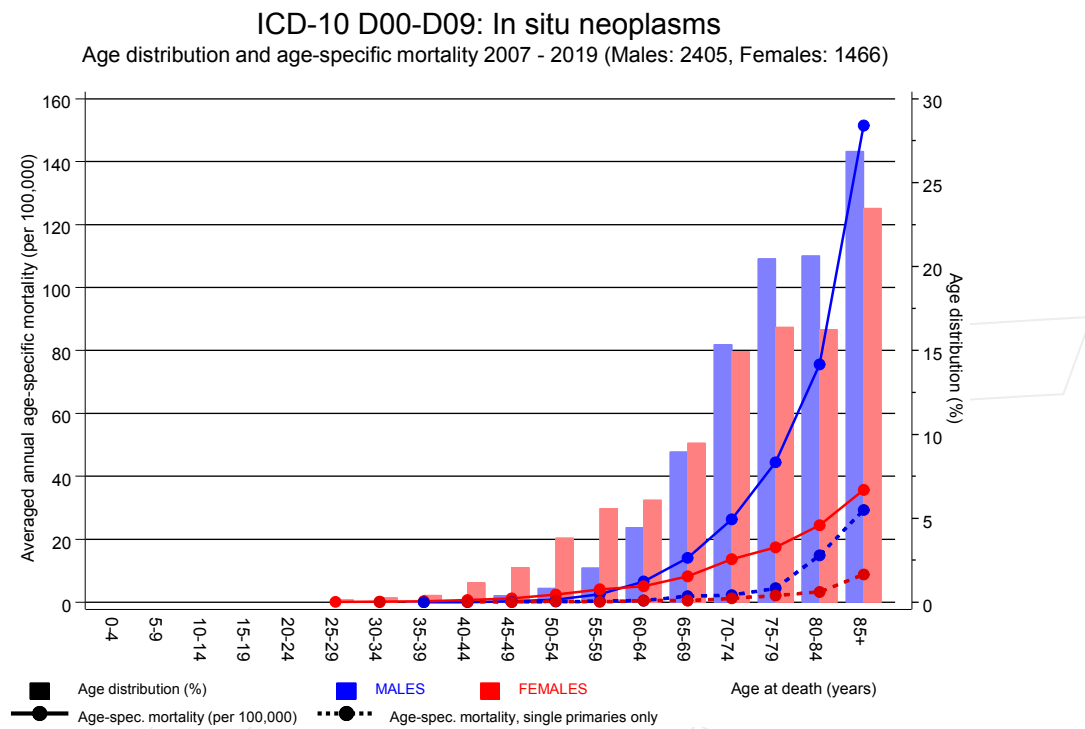
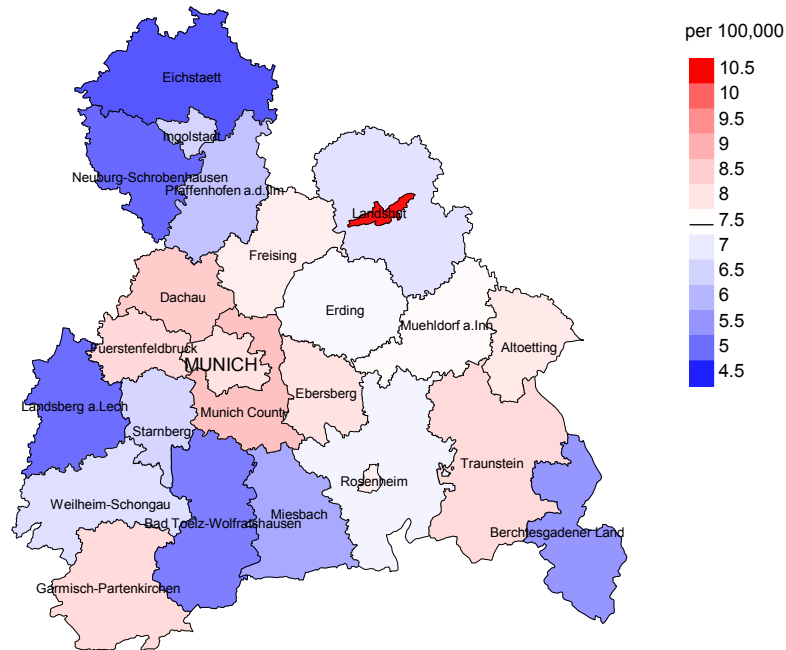


Figure 17. Distribution of age at death (bars; males: mean=72.6 yrs, median=73.2 yrs; females: mean=67.8 yrs, median=70.0 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line).

The difference between age at diagnosis (Table 3) and age at in situ neoplasms-related death (see Table 10) should be considered.

Average mortality (Germany 1987 standard population) 2007 - 2019: Males



Average mortality (Germany 1987 standard population) 2007 - 2019: Females

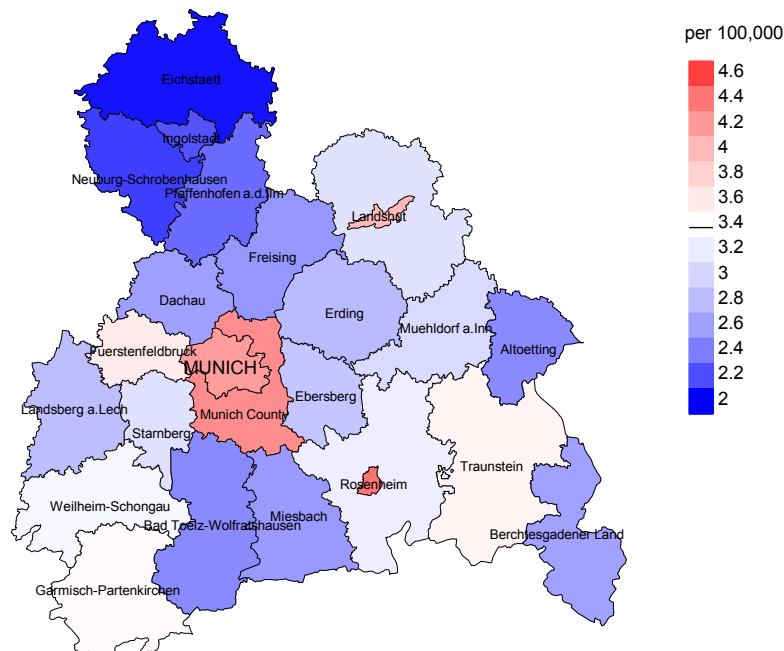
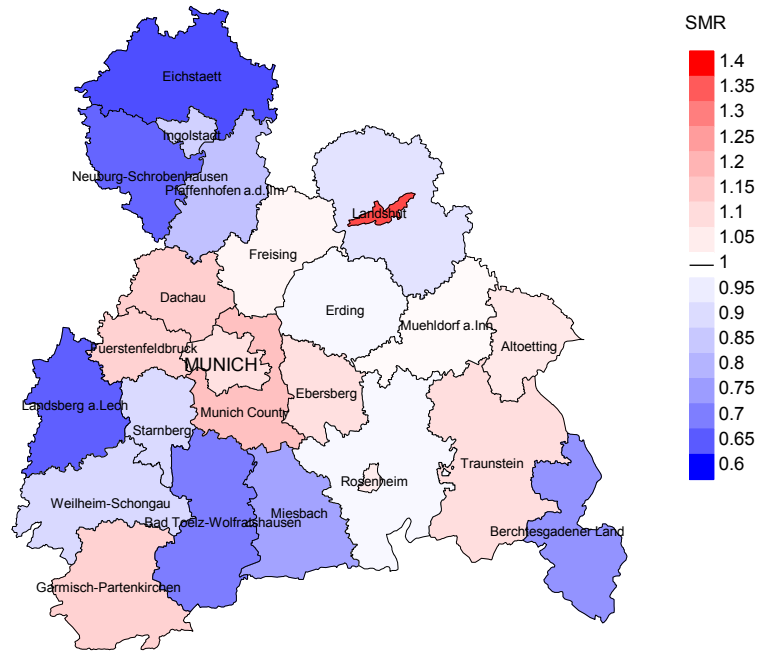


Figure 18a. Map of cancer mortality (german standard population) by county averaged for period 2007 to 2019. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 7.5/100,000 WS N=2,405, females 3.4/100,000 WS N=1,466).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,462 female residents (averaged) in the period from 2007 to 2019 a total of 33 women died from in situ neoplasms. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 2.9/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 1.7 and 4.5/100,000.

Standardized mortality ratio (SMR) 2007 - 2019: Males



Standardized mortality ratio (SMR) 2007 - 2019: Females

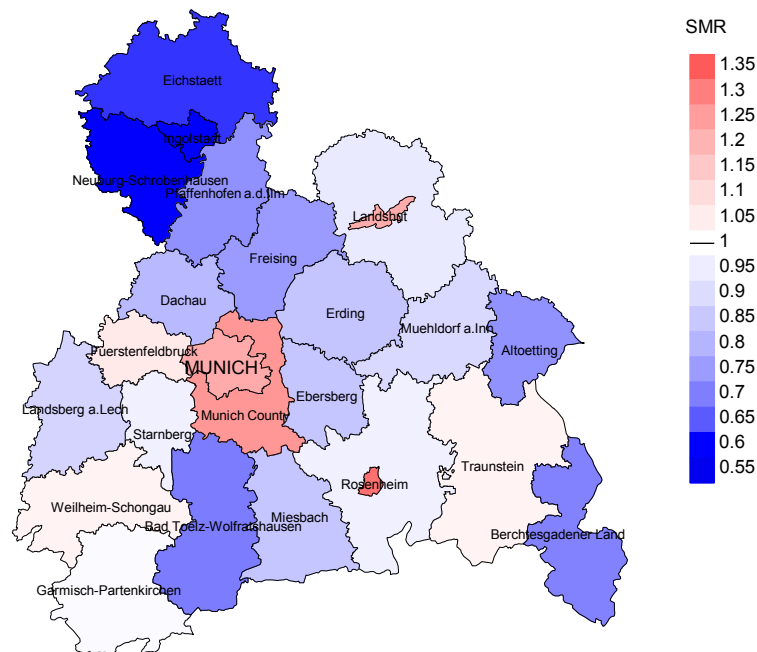


Figure 18b. Map of standardized mortality ratio (SMR) by county averaged for period 2007 to 2019. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=2,405, females N=1,466).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,153 female residents (averaged) in the period from 2007 to 2019 a total of 33 women died from in situ neoplasms. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 0.84. Though, the value of this parameter may vary with an underlying probability of 99% between 0.51 and 1.30, and is therefore not statistically striking.

Statistical Notes

In all tables and figures the respective reference values should be carefully considered. The incidence rates include diagnoses (with multiple primary), and death certificate only (DCO) cases, where applicable. For mortality statistics patients, diagnoses and progressive course of disease are presented. In the calculations, all courses of disease are considered whereby progressions occurred and/or death certificate identified progressive cancers were ascertained. Additionally there are three groups of disease course to consider:

1. All multiple primaries included

The mortality statistic describes the tumor-specific death, independent of any malignancy. The patient perspective, induced secondary malignancies, and the problem of multiple malignancies from the same primary tumor all have reasons for their inclusion.

2. First singular primary (no information about other prior or synchronous malignancy)

The mortality statistic describes the cancer-related death for patients who have no therapeutic restrictions due to a previous or synchronous cancer. These statistics are comparable to studies that have exclusion criteria based on a second malignancy.

3. Single primary (no information about other prior, syn- or metachronous malignancy)

The mortality statistic describes the tumor-specific death that occurs without any impact through secondary primaries, earlier, synchronous, later or induced. Precisely the difference between disease group 1 and 2 highlight the magnitude of the problem of secondary malignancies.

For this reason differences appear concerning official mono-causal mortality statistics. To judge the maximum deviation, 2 further tables are presented. In the first table the distribution of secondary malignancies before, at or after the described cancer are shown, that could be an alternative cause of death. In the second table, the age-specific mortality rates for all courses of disease, without designation of secondary malignancies are shown.

A previously minimally acknowledged statistic is the **age at death**, which allows for a good assessment of the quality of classification of the apparent tumor-specific death. For assumed tumor-independent deaths, the age of death should be estimated from the age of diagnosis and the normal life expectancy, whereas tumor-dependent deaths can be estimated from the age of diagnosis plus the average tumor-specific life expectancy. The comparison of different tumors demonstrates this association, if the causes of cancer and the competing cause of death are independent of each other (e.g. breast and colon versus head&neck and lung).

The ratio of mortality and incidence (mortality-to-incidence ratio, **MIR, MI-Index**) is a statistical index that allows for the evaluation of the quality of data. For diseases with poor prognoses, comparable values are obtained from all age groups, because to a large extent, the numerator and denominator contain the same cases. For tumors with a good prognosis, increasing and decreasing incidence and age-specific differences in prognosis can more strongly alter the MIR. Additionally, attention should be paid to the confidence intervals where fewer cases are reported.

The complexity of problems identified here emphasizes the importance of relative survival data for the appropriate analysis of long term results.

As a measurement of the burden of disease, the number of potential life years loss due to premature deaths in a cohort can be calculated (**PYLL**, potential years of life lost, standardized per 100,000 persons or per European standard) as well as the average loss of life years per individual (**AYLL**, average years of life lost). Depending upon the analytic aim (health economy, prevention, health care research) different methods exist for the generation of these measurements. In the results presented here, the age for a premature death is considered to be before 70 years, according to the guidelines of the OECD and the WHO (as seen in the abbreviation PYLL-70 or AYLL-70).

Shortcuts

MCR	Munich Cancer Registry (Tumorregister München)
GEKID	Association of Population-based Cancer Registries in Germany (Gesellschaft der epidemiologischen Krebsregister in Deutschland e.V.)
SEER	Surveillance, Epidemiology, and End Results (USA)
DCO	Death certificate only
BRD-S	German (FRG) standard population
ES	European standard population (old)
WS	World standard population
SIR	Standardized incidence ratio
CI	Confidence interval
EAR	Excess absolute risk = excess cancer cases (O - E) per 10,000 person-years
PYLL-70	Potential years of life lost prior to age 70 given a person dies before that age
AYLL-70	Average years of life lost prior to age 70 given a person dies before that age
SMR	Standardized mortality ratio
MI-index	Ratio of mortality to incidence, MIR
FRG	Federal Republic of Germany

Recommended Citation

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